# The JOURNAL of GEOGRAPHY

VOLUME XXIV MARCH, 1925 NUMBER 3


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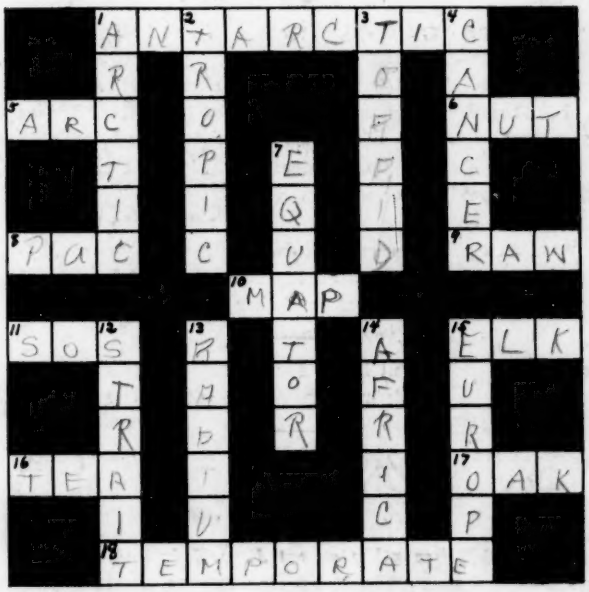
## GEOGRAPHY CROSS WORD PUZZLE

HORIZONTAL

1. An ocean
2. Part of a circle
3. Grows on bush or tree
4. Abbreviation for name of an ocean
5. Material before it is manufactured
6. Found in all geography textbooks
7. A ship's distress call
8. Animal found in northern forests
9. A beverage
10. A sturdy tree
11. Intermediate climatic zone




VERTICAL

1. An ocean
2. Where the sun is vertical once each year
3. A zone that always has high temperatures
4. One of the Tropics
7. A Great Circle
12. Narrow water passage between two larger bodies of water
13. A very valuable mineral
14. Second largest continent
15. A continent

See page 124

Published by A. J. NYSTROM & Co., for THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS
GEORGE J. MILLER, *Editor and Secretary*

# THE JOURNAL OF GEOGRAPHY

*A MAGAZINE FOR SCHOOLS*

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2249 Calumet Ave., Chicago, Ill.

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The subscription price is $2.50 a year, payable in advance. The price of single copies is 35 cents. Postage is prepaid on subscriptions from the United States, Canal Zone, Republic of Panama, Porto Rico, Cuba, Virgin Islands of the United States, Dominican Republic, Philippines, Guam, Samoan Islands, Hawaii, Mexico, Costa Rica, Guatemala, Nicaragua, Republic of Honduras, Salvador, Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, Peru, Uraguay, Spain and Spanish colonies. Postage is charged extra for Canada and all other countries in the Postal Union as follows: 27 cents on annual subscriptions (total $2.77), on single copies 3 cents (total 38 cents).

The *Journal* is the official organ of the National Council of Geography Teachers and is sent to all members of the organization. The annual dues, $2.00, are payable to the *Journal of Geography*. Extra postage rates for copies sent to foreign countries should be added to the membership dues.

Patrons are requested to make all remittances payable to the *Journal of Geography*, in postal or express money orders or bank drafts.

Members and subscribers who wish to continue receiving the *Journal* must send remittances promptly to assure the volume being complete.

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Send manuscript and books for notice or review to the *Editor*.
Send orders for back numbers to *Journal of Geography*.

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Agent for Great Britain. Arthur F. Bird, 22 Bedford Street, Strand, London, W. C. 2.

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*Published monthly except June, July and August*

PUBLICATION OFFICES: 450-454 AHNAIP STREET, MENASHA, WISCONSIN

All Business Correspondence, Membership Dues, and Subscriptions should be sent to

**A. J. NYSTROM AND COMPANY,**

PUBLISHERS, JOURNAL OF GEOGRAPHY,

2249 CALUMET AVENUE, CHICAGO

Entered as second-class matter January 15, 1919, at the postoffice of Menasha, Wisconsin, under the Act of March 3, 1879.

The JOURNAL of GEOGRAPHY
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VOLUME XXIV MARCH, 1925 NUMBER 3

# STUDIES IN THE GEOGRAPHY OF BRAZIL

## PART VI. THE GREAT INTERIOR*

WILLIAM H. HAAS
Northwestern University

The Great Interior, great only in size and possibilities, still awaits development and in large part exploration. The region is not unexplored in the sense that it never has been penetrated by the white man, for much of it was overrun and fought over by the slave hunting "entradas," starting about 1560, during their remorseless raids upon Indian tribes and Jesuit settlements in search of their quarries. Later, in organizations in which men enlisted as in an army under certain flags, "bandeiras," these slave hunting "bandeirantes"[1] crossed and recrossed Brazil, some expeditions taking a number of years. Under certain conditions they even founded temporary settlements, remaining long enough for grains to ripen or livestock to fatten and increase; but neither such settlements nor returning "bandeirantes" contributed very much, if any, either to the development or to the information of this great inland empire. The region is not new, therefore, except in the sense that it is undeveloped and that little or no trustworthy information is available on the greater part of the region. It is spoken of sometimes as the "virgin heart" of South America.

The region is a part of the great Brazilian plateau and takes in from a fourth to a third of the entire area of the country. The edge of the plateau, or "fall line," limits this division on the north; a more or less irregular line on the east, the westward limit of present profitable coastal development, defines its eastern extension; and roughly, the international boundaries on the south and west limit the extent here. However, for all practical pur-

*The earlier parts of this series of articles, I, The Background; II, Regional Divisions; III, South Brazil; IV, The Amazonas Region; and V, North East Brazil, together with certain explanation of terms, appeared in the *Journal* for November, and December, 1923, and May, 1924. The concluding article, VII, East Central Brazil, will appear soon.

[1] Read Elliott: Brazil, pp. 21-35. Denis: Brazil, pp. 32-39

poses, tho smaller, the region may be said to be made up of the states of Matto Grosso and Goyaz, an area of over 2,000,000 sq. km. (860,000 sq. mi.) and about fifteen times as large as the state of Illinois. It is very striking that in this age of mobilization of resources such a large area should be so little known, and even in large part under the control of the Indian, with almost no expanding frontier encroaching. The reason is not a lack of available resources or extremely adverse climatic and physiographic conditions as might be presumed, but it is due, chiefly if not wholly, to the fact that there is no good natural outlet for the products of the region to reach a world market. This fact has kept its resources locked up and this part almost completely isolated from the other more favored sections.

The size and latent possibilities of this great undeveloped region have had, therefore, little part in the economic development of Brazil. Its very bigness has been a handicap, and to bring this great region with its rich but undeveloped resources in touch with other sections and with the outside world is the great problem for the country as a whole. Its relative importance may be seen, in part, from the following table[2] showing the use of the land.

| *Geographic Divisions* | *Total area Hectares*[3] *(add 000)* | *Agricultural Area* | | *Fazendas (farms)* | | |
|---|---|---|---|---|---|---|
| | | *Hectares (add 000)* | *Per cent* | *Total number* | *Per cent of total* | *Av. size Hectares* |
| S. Brazil..... | 54,300 | 27,458 | 51 | 189,685 | 29 | 145 |
| Amazonas .... | 310,000 | 21,493 | 7 | 33,023 | 5 | 651 |
| N. E. Brazil... | 174,900 | 36,066 | 21 | 162,023 | 25 | 222 |
| Interior ..... | 215,000 | 44,429 | 20 | 20,118 | 3 | 2,208 |
| E. C. Brazil... | 95,000 | 45,658 | 48 | 243,304 | 38 | 187 |
| Whole Brazil | 839,700 | 175,105 | 21 | 648,153 | 100 | 270 |

[2] The table is based on the Brazilian Census of 1920 and quoted in part in Supplement to U. S. Com. Rep. No. 9, Trade and Econ. Rev. for 1922, Brazil, pp. 10, 11. It is to be noted that the phrase "Agricultural Area" does not refer to land under cultivation or even to land fit for agriculture, but refers to land included in "fazendas" or that in private hands. "Land in rural establishments" would be a better translation. The term "fazenda" may mean a farm, a ranch, or an estate, or even may mean wealth or fortune.

[3] One hectare equals 10,000 square meters, or 2.47 acres. One hundred hectares equal one square kilometer or nearly four-tenths square mile.

The table shows clearly that the interior has exceptionally large fazendas and a surprisingly high percentage of land classified as "agricultural area." The extremely large size of these separate "rural establishments," averaging over 5,000 acres each, is due, in the main, to the fact that grazing is the almost exclusive industry. This activity is on a very large scale and herds practically run wild under slight or no control except when taken for the sixty or ninety day drive to market. The relatively high percentage of lands in private hands ("agricultural area"), is an indication of the vast areas of land which must be available for grazing purposes. Goyaz with a higher percentage (37) than Matto Grosso (13) is the much more important grazing state at the present time; but Matto Grosso is said to have by far the greater grazing possibilities, altho the major part of the state is even less well situated than Goyaz. Unquestionably the total grazing lands of the region are much more extensive than the areas now under control, as the limits of the estates in many cases are not known to the owner. Much unclaimed grazing land, moreover, is said to exist on which wild cattle roam at will.[4]

The isolation of the region is, even from a grazing standpoint, fairly complete. On the north the "fall line" has been an effective barrier even to the seringueros; for few of these rubber gatherers in the lower Amazon basin attempt to get beyond the navigable lower parts of the rivers. The greater amount of the rubber produced in this region is in the area tributary to the Madeira and goes down over the Madeira-Mamoré Railway. The little that is produced along the middle Tapajóz descends that stream to the Amazon and is exported from Pará; but even the rubber from the headwaters of the Tapajóz and of the Guaporé is carried south to Corumbá. No other product at the present time finds its way in quantities to the north owing to the great difficulties encountered in getting down from the plateau. With the more thoro exploration of the region a feasible route may be discovered, but the problem of building a railroad 100 or more miles around the "cachoeiras" in to the low swampy jungle is not a project soon to

[4] "The unoccupied savannahs and grazing grounds lying within Matto Grosso and Goyaz alone cover an area larger than the state of Texas and are of at least equal fertility." Barclay, The River Parana: An Economic Survey, *Geog. Jour.* Vol. 33, pp. 1-36. (1909)

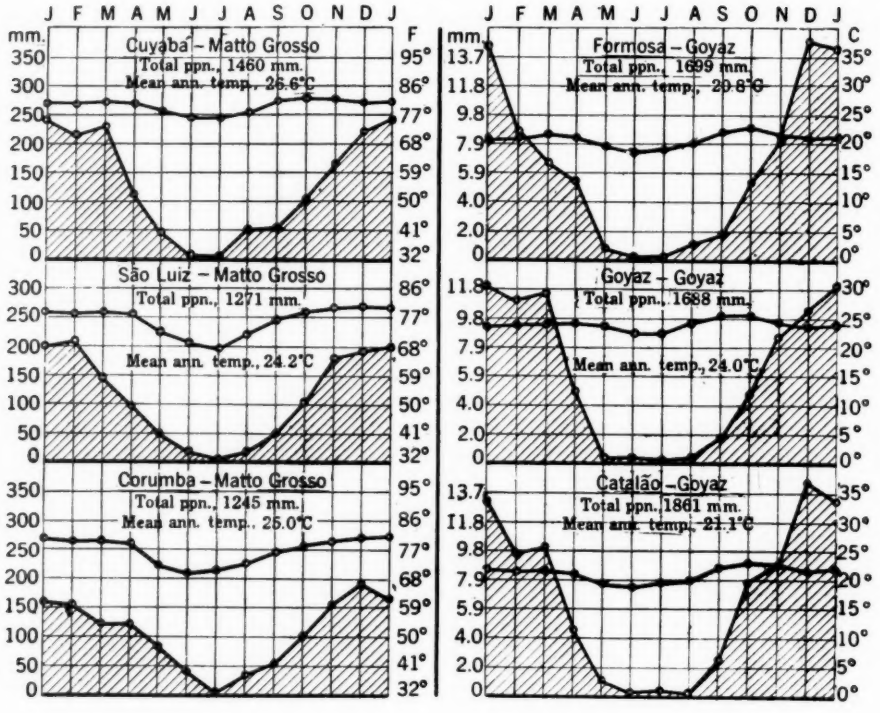


FIG. 1. Mean monthly temperature and rainfall for representative places in The Interior. Shaded areas show rainfall, in inches and millimeters. Single lines give temperature, C. and F. scale. For ready comparison note the following table:

| | *S. Lat.* | *W. Long.* | *Alt.* | *Rainfall* | *Mean T.* |
|---|---|---|---|---|---|
| 1. Cuyabá ..... | 15° 35′ | 56° 06′ | 165 m. | 57.5 in. | 79.9° F. |
| 2. Formosa ..... | 15° 32′ | 47° 18′ | 912 m. | 66.8 in. | 69.4° F. |
| 3. São Luiz ..... | 19° 00′ | 57° 41′ | 118 m. | 50.0 in. | 75.6° F. |
| 4. Goyaz ..... | 15° 55′ | 50° 07′ | 520 m. | 56.5 in. | 75.0° F. |
| 5. Corumbá ..... | 20° 28′ | 57° 39′ | 116 m. | 49.5 in. | 75.2° F. |
| 6. Catalão ..... | 18° 10′ | 47° 58′ | 830 m. | 73.3 in. | 70.0° F. |

The grafs for stations in both Matto Grosso and Goyaz are arranged according to the location of the stations from lower to higher latitudes. Note that for the stations in Matto Grosso the temperature is higher and the rainfall lower than that for the stations in Goyaz of similar latitude. This probably is due, in part at least, to a difference in altitude. The temperature curve in all cases shows a fairly uniform monthly mean thruout the year, altho the absolute extremes recorded range from 0.8° C. (Corumbá, June) to 41° C. (105.8° F., Corumbá, October). However, for this station the mean of the minima for the coldest month, June, is only 17.9° C. (64.2° F.) and the mean of the maxima for the warmest month, November, or January, is 34.3° C. (93.7° F.). The rainfall for the interior is fairly heavy; but, on the whole, very unevenly distributed. For five months from May to September, inclusive, the precipitation is so small as to be of little value. What makes it still worse, during the dry months for all the stations, the total maximum precipitation recorded for a single day in many cases is greater than the mean recorded for the month of which the day is a part.

be undertaken by any firm familiar with the history of the Madeira-Mamoré Railway on the Bolivian-Brazilian border.[5]

Neither from the east is there any easy route into this region. The Serra do Mar or maritime range is a fairly effective barrier, but the lack of natural routes west even after the plateau has been reached, especially in the north, is probably the more serious. The stream courses, in the main, have a south-north direction and are, for the most part, too large to be forded even during the dry season. Ranges of hills and deep gorges, moreover, to be crossed would add to the difficulties were attempts made to make an outlet to the east in the northern part.

The colonists early reached the plateau doing relatively little with the narrow coastal slope, and even today the seaward slope of the Serra do Mar remains sparsely populated except in the extreme south. The capitals and the leading cities are on the coast; but between these and the agriculturist there still remains a forested screen. However, a relatively narrow stretch, only, of the plateau has been agricultural Brazil, and the width of this stretch, wider in places, narrower in others, has been determined by the relation of value of product to cost of transportation. In no case has the product warranted long costly hauls except thru the East Central Section, where some of the products of the near interior enjoy the advantages of proximity to coffee and rich minerals. Under present conditions the westward limit of this frontier practically has been reached.

The São Francisco is the only important river that breaks thru the Serra do Mar; yet it is of little value in providing a gateway. The general direction, the rapids, the narrowness of the gorge, all militate against it. In Brazilian geographies it is divided into the baixo (lower) and alto (upper) São Francisco separated by a series of falls, the major of which, the Paulo Affonso, being 80 meters high. A railroad from Piranhas to Jabotá 115 km. long connects the lower and upper navigable parts. The lower river with a length of 277 km. is navigable thruout, and the upper is navigable for small boats from Jabotá to the falls of Sobradinho, a distance of 428 km. and from there to Pirapora during the wet season, a

[5] This railway 224 miles long was completed in 1912 and was part of an international agreement between Brazil and Bolivia which involved the transfer of the Acre Territory. The road was built with a tremendous toll of life, and financially has not proved a success.

distance of 1,577 km. The river is subject to considerable variation in volume and velocity; and during the rainy season, from January to May, the waters may be six to eight meters above the common level. Its normal flow is given as 2,000 cu. m. per second, with a velocity up to 10 km. per hour. At Penedo in its lower course it has a width of 1,330 meters, and in its upper course at Petrolina 770, while its maximum width may be as much as 3,000 meters. It would seem that a river of such proportions would make an excellent gateway, and during the gold rush it was a busy highway. However, even with a railway spanning the falls the river has had relatively little effect on the development of the plateau.

Some of the products of the Interior pass out thru the East Central section over two routes. The shipments out of the State of Goyaz over the Mogyana Railway from the stations of Araquary and Uberabinha during 1922 give a fair conception of the importance of this trade and the products produced by this state. Practically all the surplus products of Goyaz go out over this route and those listed in the following table may be considered as the total exports.

*Leading Exports of the State of Goyaz*[6]

| | | | |
|---|---|---|---|
| Rice | 6,338,647 kilos | Tallow | 173,971 kilos |
| Xarque | 871,501 kilos | Tobacco | 153,785 kilos |
| Coffee | 838,647 kilos | Cotton | 118,467 kilos |
| Beans | 834,901 kilos | Bones | 106,251 kilos |

Aside from the products enumerated, a score or more of minor products make up the list, the major portion of which are animal products of which butter, 34,000 kilos, and cheese, 43,000 kilos, are the more important. In addition the road carried 60,356 head of cattle and 5,961 hogs. It is declared, however, that the actual number of cattle sent out of the state is double this number. This seems a small export for a state with an area of 300,000 sq. mi., and a population of about half a million. Little else, however, can be expected when a state with a total length of 1,800 km. has only 180 km. of railway. Much is hoped for in the state when the extension now building, which will increase the length to 500 km., connects the capital city, Goyaz, to the outside world.

The other outlet to the east is over the strategic military line from São Paulo to Porto Esperança on the Paraguay River. This route, however, offers little as an outlet due to the unreliable

[6] U. S. Dept. of Com., Econ. and Trade notes, p. 236

service, trans-shipments, and high freight rates. There is only a tri-weekly subsidized service, and the best trains take four days to make the distance from Porto Esperança to São Paulo, a distance of 1,706 km. In time this route may become important as it offers connection with Puerto Suarez[7] on the opposite side of the Paraguay and with the Santa Cruz country of eastern Bolivia.

The outlet to the south thru the La Plata is the most important, especially for Matto Grosso, in spite of the fact that products must pass thru a foreign country and out thru a foreign port. By far the greater amount of products south pass thru Corumbá, a city of about 12,000, the commercial center of this region. The town is advantageously situated on the Paraguay at the terminus for the River Plata steamers of four to five foot draft, and connected thru Porto Esperança, on the opposite side of the river, by rail with São Paulo. In spite of being on the crossroads of trade routes, Corumbá is nevertheless isolated. The problem of an outlet for this region is better appreciated when it is realized that Corumbá is 1,422 miles by steamer from Buenos Aires and an equally great distance west of Rio de Janeiro.

This great distance from a sea port necessitates long and expensive hauls, the cost of which few commodities can stand. The bi-monthly steamboat service, interrupted at times, from Buenos Aires to Corumbá is slow and the freight rates are high. At best it takes from three to four days to go from Buenos Aires to Asunción, where goods and passengers are trans-shipped, and from four to six days from Asunción to Corumbá, altho this distance is less than half as great. Rates are very high, about $142.00 for passenger and about $60.00 per ton from Buenos Aires to Corumbá. However, the cost and delay of shipments out thru Santos are still greater. In spite of the roundabout way, the trade of Matto Grosso is down the Paraguay, and the wonder is not that there are so few products going out but that there are as many.

The exports, however, are insignificant considering the great size and possibilities of the state. The area is given as about 550,000 sq. mi., outranking that of Great Britain, France and Italy combined. The name signifies great forests, but the state is said to be especially rich in grass lands. "Of all the lands upon which

[7] See: W. O. Blanchard, *Jour. of Geog.*, Vol. XXII, pp. 341-345. Foreign Trade Routes of Bolivia

cattle are being raised, none are more fertile than Matto Grosso"[8] seems to be the general import of most descriptions. The number of cattle is estimated at about three million head, altho owners, in the majority of cases, are not aware of the number in their half wild herds. The leading products shipped out of Corumbá are xarque, hides, rubber, and ipecac, a vomative, used also in large quantities as a dye for khaki. Altho rich in woods little lumber is exported. Some rice occasionally goes down the river, but, in the main, the vegetable food products are consumed by the 250,000 or more people of the state. During the best years such as in 1918 the total export was a little over $1,000,000, and the import about one-half that much. This trade for a rich region seems especially small in view of the fact that Cuyabá, the state capital, was founded as early as 1719.

It is evident that this region rich in resources is undeveloped because it lies in the heart of a great continent with no natural outlet for its products. Railroads, moreover, cannot change the situation and, if built, would soon pass into receivers' hands since there is no product that could stand the necessary high transportation charge. Coffee in São Paulo, Minas Geraes, and southeastern Matto Grosso is practically the only agricultural product in quantity that has thus far been able to pay the freight; yet there is a limit to the demand for coffee, and the production already in many of the outlying sections is said to be unprofitable. The distance from world markets makes the La Plata outlet, in the main, also questionable. Matto Grosso is said to be very rich in minerals; yet aside from a little gold placer work, and a few diamond washings north of Diamantino the mineral resources remain locked up. The war started the development of an unusually rich deposit of manganese ore near Corumbá, "probably the largest mass of such ore in existence"[9] but with the close of the war this enterprise stopped also.

The only industry of general importance in the region is the growing of livestock. This has been possible because the cost of producing xarque and hides from the half wild herds is almost nil. The amount produced, however, is insignificantly small in comparison to the size and richness of the area producing. Neverthe-

[8] U. S. Dept. of Com., Misc. Ser. 86, p. 30

[9] U. S. Com. Rept., April 1, 1920, p. 18

less, the growing of cattle undoubtedly will be the chief industry for many years to come with probably a change to a better grade of stock. The present native stock is runty and bony, and altho Brazil, as a whole, reports about 20,000,000 head, several million more than Argentina, the estimated valuè is little more than half that of its southern neighbor. As long as xarque and hides are the only products there will be little inducement to improve the grade, for any kind of animal is almost as good as another, in fact a fatless animal is the preferable one.

The growing of cattle in this region is not without its drawbacks. That there are excellent cattle sections, south of the fourteenth parallel, such as those in southern Matto Grosso along the Paraguay is unquestioned, yet were conditions thruout so very favorable, the number and value of the cattle should be much greater than it is at present. Under the hot tropical sun, grasses do not remain succulent very long and soon become harsh and unpalatable, necessitating frequent burnings. In tropical countries insect pests are much more of a menace than in higher latitudes. The worst of these, perhaps, are those that bury themselves in the skin, there to raise a brood, not only a menace to the well being of the animal but also making the hides of little value or even worthless. The cattle tick which is such a scourge in many of our southern states is equally active here. The hoof and mouth disease so common in all the cattle countries of South America, takes its toll here also. To meet these and other drawbacks, many Indian zebu bulls have been introduced, whose progeny when crossed with the native stock is said to be fairly immune to the ills to which the thorobred falls heir to even more easily than does the native scrub stock. Such crosses, however, never produce the highest grade meats.

The Interior has been spoken of also, besides cattle, as a cereal country. Some cereals, the more important of which is rice, can be grown but the present production is extremely small. Varieties of heat resisting wheat have been introduced with some show of success and would find a ready home market could it be produced in competition with foreign wheats. During the war serious efforts were made to make Brazil independent of this one item of import, for the importation of wheat and flour is all out of proportion to production possibilities. The import of wheat into Brazil for 1922

was the greatest on record up to that time and there are no signs that the situation will be changed soon.

*Imports of Wheat and Flour*[10]
(*In tons*)

| | 1913 | 1920 | 1921 | 1922 |
|---|---|---|---|---|
| Wheat in grain..... | 345,695 | 281,478 | 378,552 | 436,858 |
| Wheat in flour..... | 164,767 | 109,379 | 65,607 | 120,113 |
| Total ..... | 510,462 | 390,857 | 444,159 | 556,471 |

That the competition in Brazil between exporting countries is close is seen in the fact that the distribution is influenced by the geographic position of exporting countries. Altho Argentine flour enters nearly every port, about 91 per cent enters Rio and the ports south. Uruguayan flour does not go north of Rio Grande do Sul, nearly half entering at Santa Anna do Liveramento. Practically none of the American flour goes south of Santos and about one-fourth enters the port of Pernambuco. It is interesting to note that in 1922 some flour came to Brazil from far distant Rumania. It would seem that The Interior, parts of which undoubtedly can grow wheat, should be able to meet most of this competition.

Poor transportation has been the great drawback, but new conditions may cause this region to develop rapidly in the relatively near future. The enormous power resources[11] may make transportation sufficiently cheap to be efficient. Probably the greatest hope of all lies in motor transportation, which many believe will revolutionize conditions within the next decade. The flat wide uplands make road-building in many sections a relatively simple problem, and the long dry season makes hard roadbeds and bridges, in the main, needless expense. Rondon in connection with his work has built such roads and proved their feasibility. However, the question of motor fuel is vital; but this, it is believed, can be solved by the growing of manioc for alcohol or even the using of vegetable oils such as babassú, found here also in enormous quantities. The Brazilian government is aware that the only way to develop a region is thru transportation, but the lack of available funds makes it impossible to carry out this policy at once.

[10] *The Brazilian Mail*, Oct., 1923. Brazil as a Wheat Grower

[11] See: U. S. G. S. World Atlas of Commercial Geol., Pt. II, pp. 16, 17

One of the boldest conceptions to break up the "hem civilization" and aid in the development of the interior is to move the national capitol from beautiful Rio with its score or more of government buildings to the new Federal District in the wilds of Goyaz. Other reasons such as security and greater effectiveness in government are given, but the most effective argument seems to be to bring the main activity into the center of the republic. This it would do hydrographically, and, in a measure, geographically for the new district is at the source of three leading rivers of the plateau, the Tapajóz connecting with the Amazon, the São Francisco with the Atlantic, and the Parahyba sending its waters thru the La Plata.

This transference is provided for in the constitution and received added significance on September 7, 1922, at the centenary of independence when the cornerstone of the new capitol was laid at the new Federal District in Goyaz. To do this, material and workmen had to be transported from the end of the railroad some 310 km. in auto trucks, the last part of the journey being thru tangled brush without the semblance of a road. More recently a bill has been presented in Congress to grant concessions to some firms for laying out the city, constructing the necessary buildings, and starting gas and electric light plants. Such an undertaking, altho stupendous, has its precedent in the removal of the capitol of Minas Geraes from Ouro Preto to a new site, Bello Horizonte, now a city of 30,000.

One of the very striking features of Brazilian geography is the lack of penetration in spite of the fact that Brazil had some of the earliest settlements in the New World. The sea still dominates life so completely that few venture beyond the border; and yet, the Brazilian is not a fisherman nor a mariner. The enormous coast line has made it possible for Brazil to have a population of some 20,000,000 or more, yet the sea route is the only one that connects these people. As far as Brazil's place in the world is concerned, the interior, the greater part of the area, might as well belong to another power. There are no land routes of more than local importance, for physical features have been adverse. Can these be overcome? Local problems, of course, will have their solution, but The Great Interior will always have to run its race under a severe handicap.

# THE MAGIC RUG

FLORENCE STEWART
Skokie School, Winnetka, Ill.

The dramatization of "The Magic Rug" was given by a fourth and a fifth grade for a Parent and Teachers' meeting. All thru the year the fifth grade in their study of South America had been vitally interested in the strange customs and costumes of the various South American peoples. In our industrial study of the continent, the rubber industry, with its numerous processes of gathering, smoking and manufacturing, and the picturesque Amazon valley had made a strong appeal to the children. Groups worked on this industry from every angle, including note books, charts, pictures, sand-tables and bulletin boards. In our reading classes we had been making living pictures of our stories, and the children asked to carry this idea into their geography. They made many living pictures of rubber scenes in the Amazon valley. From this developed many small dramatizations of other industries and places. Geography soon became our most interesting study. Work in other subjects was done quickly and well, in order to have more time for geography. When we were asked for a program for our Parent and Teachers' meeting, we all decided at once that it would have to be about our geography. One of the fourth grades asked to coöperate with us. Their work in geography covered the world as a whole. Their two scenes, the orange groves in California, and the Japanese tea house scene, were the parts of the world that had interested them most.

## ACT I

*Characters:* BILLY BROWN and BETTY BROWN. *Place: The Brown's nursery. Time: The present on a rainy afternoon. When the curtain rises* BETTY *is seen sitting on the floor playing dolls. She is rather impatient with her doll and shakes and spanks her.* BILLY *is roaming around the room trying to amuse himself in various ways.*

BILLY. *(Looking out of the window)* Why doesn't it stop raining? It's rained now for three days, I hate it. *(Turning quickly to* BETTY*)* I wish I had a brother instead of a sister. If I had a brother he might play marbles with me or box with me. Any way, he wouldn't spend all day playing with an old doll.

BETTY. Well, I wish I had a sister, who would play house with me, or at least a brother who was agreeable. You've been cross all day.

BILLY. So've you————just as cross.

BETTY. *(Looking for a long time at her doll)* I know I've been cross—we both have. But I'm not going to be any more. I'm going to put Daffodil away and if you'll get your marbles, I'll play with you.

(BETTY *puts her doll away while* BILLY *gets his marbles)*

BILLY. I'll give you half mine to start playing. *(Counts them and gives her half.)* Now we're ready. You shoot at this big alley.

*(They play for a few minutes.)*

BETTY. Do you like to play marbles in the house?

BILLY. No! I'm getting tired of it. What will we do now?

*(They ponder a moment.)*

BETTY. *(Excitedly)* I know. Let's look at the "snaps" that Uncle George took on his travels.

*(Get a box from under the table.)*

BILLY. Gee! Yes! Those are great fun. When I grow to be a man, I'm going to travel everywhere too.

BETTY. I'm going too.

BILLY. No you can't. Just men go hunting and travelling everywhere.

BETTY. I don't care. I'm going when I grow up. Now let's sit on the floor and look at these and pretend that we're there.

*(They look at pictures and exclaim over them.)*

BETTY. I wish that we had a Fairy Godmother or—or—or

BILLY. Or a Genie.

BETTY. To take us to these places.

*(A loud crash, everything grows dark.)*

## ACT II

*Characters:* BILLY BROWN, BETTY BROWN, GENIE OF RAINY AFTERNOONS. *Place and Time: Same. When the light comes on the* GENIE *is standing in the middle of the room with his arms folded. He carries a rug over one arm. The children are clinging to each other in fright.*

GENIE. Don't be frightened children. I am the Genie of Rainy Afternoons. I heard you call me. I have brought an answer to your wish. *(Lays rug on the floor)* Here it is. Now listen carefully because I can appear but once as I have other discontented children to amuse.

Whenever you wish to go anywhere you must sit on the rug, tailor fashion, with your head in your hands—thus *(He shows them how.)*. You must both sit on it, as the charm will not work for one alone. Before you sit on the rug you must decide where you are going. You must decide without quarreling or the rug will disappear and never come back. Then when you are ready you must chant together.

"Rug, rug,
Up and away

To (*Then name the place.*)
We're going today."

Try to say it now. Pretend that you want to go to—Alaska.

BILLY and BETTY. *(Rather timidly)*

"Rug, rug
Up and away
To Alaska
We're going today."

GENIE. That is right. When you want to come home, say the same thing, naming your nursery as the place for which you're bound. Remember that quarreling makes the rug disappear—never to come back.

*(Big crash—all is dark, during which the Genie disappears. Then the lights come on)*

BILLY and BETTY *(Rubbing their eyes and staring.)* He's gone.

BETTY. Weren't you scared?

BILLY. No!, at least not very.

BETTY. Well, let's use the rug. Where will we go?

BILLY. Whatever we do we mustn't quarrel. Mother said that gentlemen should let girls be first always. So you may choose.

BETTY. Oh Goody! Let's see. Guess I'll choose—Oh I know—I want to go to the Amazon Valley and see them gather and smoke rubber.

BILLY. I like that too. Let's get on the rug. *(They sit on the rug as directed.)*

BILLY and BETTY.

"Rug, rug
Up and away
To the Amazon Valley
We're going today."

*Curtain*

## ACT III

*Characters:* BILLY BROWN, BETTY BROWN, RUBBER GATHERER, RUBBER SMOKER, BOATMAN, BOATLOADER. *Place: Amazon Valley. Time: three minutes later. When the curtain rises a rough, straw thatched house on stilts is in the middle of the background, a boat with a hood of straw at one end is being loaded with rubber biscuits. A man is standing in the boat, catching the biscuits being thrown to him. At one side a man is smoking rubber and the rubber is seen coming in.* BILLY *and* BETTY *come running on to the scene dragging the rug after them.*

BETTY. I thought we would hurt ourselves when we landed, but we didn't even bump.

BILLY. It was great fun sailing along through the clouds. Oh see!

BETTY. Oh, it's just like the pictures. See, there's a man smoking rubber. Let's go over and watch him.

BILLY. *(To the rubber gatherer)* What have you in that pail?

RUBBER GATHERER. Sap from the rubber tree. This is the second time I've been out today. Go over there and you'll see the first lot of sap being smoked.

*(They go to the smoker.)*

BILLY. Will you tell us all about it please?

RUBBER SMOKER. I build a fire of green nuts first, which makes a good smudge. Then I dip this paddle in a pail of rubber sap. Then I turn it over the fire until it is hardened, then I dip it again and smoke it again. I do this over and over until I have a huge biscuit. If you go over to that boat you'll see them loading the biscuits. They will be taken down the Amazon river to Para. There they will load it on large vessels, which go all over the world.

BILLY. Gee this is great! But whew it's hot and damp here! Where's that rug? Are you ready to go?

BETTY. Yes. Here's the rug. Where are you going?

BILLY. Japan. I've been wild to go there ever since Uncle George returned. *(They sit on the rug and chant.)*

"Rug, rug
Up and away
To Japan
We're going today."

*Curtain*

## ACT IV

*Place: A Japanese garden with a woman seated in the tea-house. Time: The Cherry Festival. Setting: Tea House, lanterns, cherry trees. Enter the visitors.*

BETTY. What a beautiful garden!

BILLY. See the wonderful cherry trees.

BETTY. What is that strange thing coming?

BILLY. Why, that's a lady arriving in her jinricksha. What a queer looking fellow is pulling it! Look at his dress of straw.

*(The lady alights and goes into the tea house. She bows politely as she enters. Other figures move about. Everywhere is courtesy and calmness.)*

BETTY. Do you notice how polite these people are?

BILLY. Yes, Japan is noted for its courtesy, its flowers, its tea, silk and festivals.

(BILLY and BETTY *look around for a long time.)*

BETTY. Let's get some tea at the tea house.

BILLY. Oh yes! *(They go in the tea house and are served with tea.)*

BILLY. I hate to leave this beautiful place but I want to see some other places also. What are you going to choose this time?

BETTY. I have it all decided. I have heard so much about the queer festivals and market days in Venezuela that I want to see them. I want to go to Caracas, the capital of Venezuela and there I want to see a regular market day.

BILLY. But their market day is on Sunday.

BETTY. I know it, but our magic rug can take care of that I guess. Let's try it anyway.

BETTY and BILLY. *(They sit on rug.)*

"Rug, rug
Up and away
To a Caracas market place on Sunday
We're going today."

*Curtain*

## ACT V

*Characters:* LOTTERY TICKET MAN, VEGETABLE MAN, CHICKEN MAN, FLOWER GIRL, DANCING GIRL, INDIAN WOMAN, *two* SPANISH ARISTOCRATS *and servant, two* AMERICANS, BETTY *and* BILLY. *Place and Time: Market Day in Caracas. There is a great deal of shouting and offering of wares.* BETTY *and* BILLY *are unnoticed. Two* SPANISH ARISTOCRATS *followed by their servant are buying supplies. The* DANCING GIRL *is entertaining. The* FLOWER GIRL *offers her wares to every one. The two* AMERICANS *come on.*

ALL. Oh! Americano! Americano!

*(They crowd around displaying their wares.* The Americans purchase beads and baskets from the Indian woman and go away.)

BILLY. Isn't it exciting!

BETTY. Yes. Aren't the Spanish costumes beautiful. I wish I had some money so I could buy some things.

BILLY. I'm ready to go. Are you?

BETTY. Ye--ss, but I want one more look at the dancer and the flower girl. *(Runs and looks.)*

BILLY. Now, we've seen enough of foreign countries. We're going back to the good old United States. Off for California and an orange grove.

BILLY and BETTY. *(Sitting on rug)*

"Rug, rug
Up and away
To California
We're going today."

*Curtain*

## ACT VI

*Characters:* OWNER OF THE GROVE, *his* OVERSEER, *two* PICKERS, *two* PACKERS, MAN *watching the smudge fires,* VISITORS. *Place: An orange grove in California, with rows of orange trees, smudge fires, and orange crates. Enter the* FRUIT GROWER *and his* OVERSEER. *They look around.*

FRUIT GROWER. Looks as tho we might have a frost tonight, and the oranges are ready to be picked.

OVERSEER. I'll see that the smudge fires are started and kept burning.

FRUIT GROWER. We mustn't lose this fine crop now, it means much money.

OVERSEER. Don't worry, the men begin work here tomorrow.

*(Exit both)*

*(Enter the man to light the smudge fires. Piles sticks between each group of trees. Lights them, and the smoke arises.)*

*(Next morning)*

*(Enter the pickers. They start to work whistling as they work, detaching the oranges, and placing them in the baskets they carry.)*

*(Enter the visitors)*

BILLY and BETTY. What do we see? Oranges growing on a tree! *(Rubbing their eyes and stepping up to the tree.)*

FIRST PICKER. Pick one for yourself, and see if you ever tasted better.

BILLY. My! These are sweet and juicy.

SECOND PICKER. The best that California sun can grow, and ripen.

BETTY. If we could only send a box home.

*(Enter the overseer in time to hear the last.)*

OVERSEER. That's easy, we'd be glad to do it for you. *(Calls two men to bring a crate. The oranges are picked. The crate nailed.)*

OVERSEER. *(Taking out a card to address.)* Where to, Sir?

BILLY. Wollaston School, Wollaston, Massachusetts.

OVERSEER. Thanks, next week you'll have these on your breakfast table. Not far from California to Massachusetts, after all.

BETTY. Billy, I'm tired. We've been away a long time and I know Mother is worrying. Let's go home.

BILLY. Gee, I hate to, but I suppose that we can go again the next rainy day. All right! We'll go. *(They sit on rug.)*

BILLY and BETTY.

"Rug, rug
Up and away
To our nursery
We're going today."

*Curtain*

ACT VII

*Place: The nursery. Characters:* BETTY, BILLY, GENIE.

BILLY. It's all over.

BETTY. Wish that it would rain every day.

BILLY. Wasn't the overseer great to give us the oranges?

BETTY. I loved that dancing girl.

BILLY. I wonder if we can keep the rug or if the Genie is coming for it.

BETTY. I won't be afraid this time.

*(Crash. Darkness)*

*(Genie standing as before. Children roll up rug.)*

BILLY. We had a wonderful time. Thank you.

GENIE. You used the rug well. I knew every place that you visited. You didn't quarrel either.

BOTH. No, not one bit.

GENIE. Then you may use the rug another time. On the next rainy day, wish for me as you did today and I will appear. Now—farewell.

CHILDREN. Goodby!

*Curtain*

The presentation itself was enjoyed by the audience. Of course, we were pleased with the success with which it was produced, but the final result was the least valuable thing gained. In working to make it a success, more valuable results than the final production were won. Every child, whether cast in the play or not, was interested. Books were searched thru and thru for pictures to help with costuming. Reading matter was voluntarily studied in the hope of finding suggestions for stage settings. Attics were searched for properties. Willing hands nailed, pasted, cut, and sewed. In our market scene we had live ducks and chickens brought by their small owners. Our donkey, which was driven by the chicken man, was made of two boys clothed in gunny sacking. One boy, whom we had despaired of ever interesting in any school work, made a special trip to Boston to his uncle's wholesale rubber house. This trip resulted in our having real rubber biscuits in our Amazon valley scene. Boys, who had no part in the cast, labored hard and long on a native boat to be loaded with rubber biscuits. Everyone helped and everyone was interested. The geographical knowledge acquired and the knowledge of where to go for such information was far more than ordinary class work could ever achieve. Aside from this knowledge gained, the work proved to be a valuable project in coöperation.

# THE OZARK REGION OF ILLINOIS—A REGIONAL STUDY IN LAND UTILIZATION*

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Land utilization is the study of the use made of the land by man. The best use of the land, which demands a close adaptation to the physical conditions, constitutes one of the urgent fields of inquiry today. It is not the purpose of this study, however, to say whether the best use is being made of the land in the region under discussion. It is an analysis of the present use related to the physical conditions which characterize the area.

The Ozark Region of Illinois has been chosen for this study because it constitutes a geographic unit, and presents a variety of physical conditions which illustrate certain principles of land utilization. It is a section of the state where the peculiar physical conditions are not commonly known. The more fertile prairies to the north have eclipsed, in popular interest, this less favored area. The environment presents some features unfavorable to agriculture, notably, the generally hilly surface and the poor soils. In some respects it may be regarded as the antithesis of the productive prairies to the north.

## THE OZARK REGION

The Ozark Region is a small area occupying one twenty-eighth of the area of the state of which it is a part. It differs from its surroundings to a greater or less degree in its geological formations, relief, soil, climate, and therefore in the problem of land utilization.

The Ozark Region, as the term is used here, includes the Ozark Ridge and its outliers which lie between the converging waters of the Mississippi and Ohio Rivers (Fig. 1). The Ozark Region thus defined is delimited by the Mississippi River on the west, and by the Ohio River on the south and east. On the north, the Saline River and its tributary, the South Fork, draining to the east, and the Big Muddy and its tributary, the Crab Orchard Creek, draining to the west, from their low watershed follow closely the base

* An abridgment of a paper presented at the Washington meeting of the National Council of Geography Teachers, December 29, 1924.

of the Ozark Ridge. If these streams be adopted for the northern boundary the Ozark Region is found to have an almost "insular" location, thus girdled by rivers.

### The Ozark Ridge

The Ozark Ridge is a belt of rugged hill country which extends across the southern extremity of the state for a distance of seventy-five miles. Its width ranges from fifteen to forty miles. The "Ozarks," the name locally applied to these hills, seems appropriate since the ridge is commonly regarded as a spur or eastward extension of the Ozark Highland of Missouri. The change from

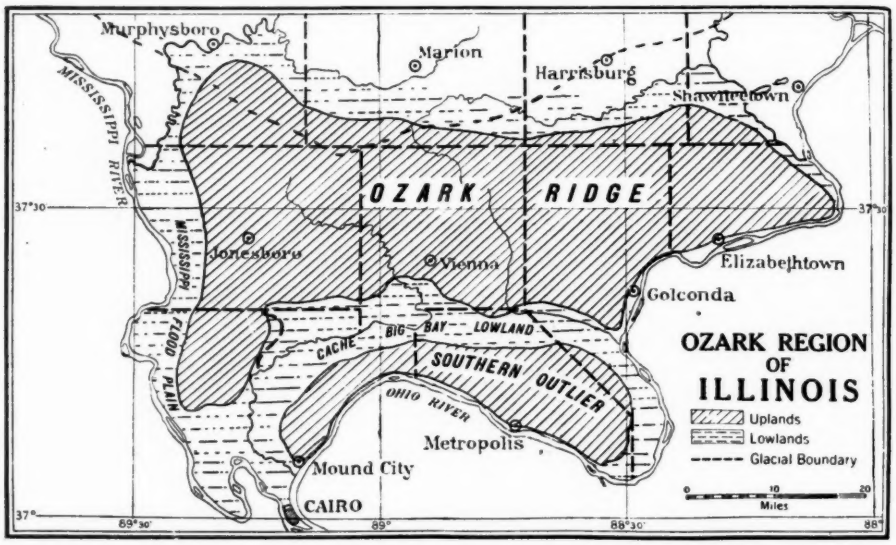


FIG. 1. The Ozark Region of Illinois, showing the location of the uplands and lowlands

lowland to upland is abrupt and often involves a rise of 500 to 600 feet. It is this greater elevation above the surrounding territory that makes the ridge a conspicuous topographic feature. The crest of the ridge lies near the northern border and here hills rise to elevations of 900 and 1,000 feet. Streams with their headwaters in this dividing ridge have carved it into a series of rocky gorges, separated by flat-topped ridges. The farms occupy these partially dissected interstream divides; these hill-top farms constitute some of the best fruit lands of the state. To the south of this roughly broken portion of the ridge, the country is characterized by a gently rolling surface. The hills are lower, with round slopes; the valleys are wide and open.

### The Crescent-shaped Outlier

Besides this ridge the Ozark System of Illinois includes a number of outlying groups of hills, which are cut off from the parent mass by river valleys in much the same way that the main highland has been separated by the Mississippi River from the Ozarks of Missouri. To the south of the ridge is a large and compact outlier, which outlines here a great bend in the Ohio River. This is the largest and most important of the various groups. The length of the outlier is approximately forty-five miles and the width ranges from two to twenty miles. The average elevation is 200 to 300 feet above the surrounding lowlands.

### The Lowlands

In addition to these highlands, the region under discussion includes several lowland belts, for the Ozarks drop off in all directions to bordering alluvial plains. The northern escarpment faces the valleys of the Saline and Big Muddy Rivers; the eastern and southern looks down on the narrow flood plain of the Ohio; while the western has a broader outlook on the alluvial plain of the Mississippi River. Between the southern escarpment of the Ozark Ridge and the crescent-shaped outlier lies an east-west trough occupied by the Cache-Big Bay Rivers. As the highlands consist of a complex of hills, ridges, and valleys, the lowlands show a succession of sloughs, lakes, and swamps. Owing to the flat surface and to the slight elevation above the drainage channels, large tracts are subject to overflow and are perennially water-soaked. When drained these soils are exceedingly fertile and produce a variety of crops. Corn, wheat and hay are the chief crops.

### The Soils

With the exception of the thin veneer of drift on the foot-hills of the northwestern part of the upland (Fig. 1), the Ozark Region is unglaciated. However, the soils are not purely residual for the material is buried from five to twenty feet beneath deposits of loess. The low fertility of the soils of the Ozark Region, as compared with those of the rest of the state, is due to a number of factors. In the first place, the original forest cover of the area limited the growth of grasses and, therefore, precluded the accumulation of a rich humus content. The rugged relief and heavy rainfall has resulted in excessive erosion. The heavy rainfall has leached from the soils the basic elements necessary for plant life.

The relatively short time during which the soil is frozen is also a factor in influencing the amount of erosion which takes place. Then, too, the longer period of cultivation of the soils of this region, as compared with the prairies to the north, together with the unscientific management of the soils, has reduced their fertility.

### The Climate

The climate of the Illinois Ozark area is not essentially different from that of the neighboring regions. It is characterized by large seasonal and diurnal ranges of temperature, frequent weather changes, well distributed rainfall, with a maximum occurring in the spring and early summer. Because the broad prairies to the north afford no protection from the cold winds and storms, the region frequently suffers from cold waves. They are not of long duration, however. If these occur in the spring after the fruit buds are out, the result is serious loss to the orchard men. Likewise the coastal plain to the south is no barrier to the warm moisture laden winds from the Gulf of Mexico. Altho these southerly winds lose much of their moisture thru precipitation farther south, they are the chief source of rainfall for the Ozark Region.

## The Major Uses of the Land

There are three agricultural uses of land: (1) for crops; (2) for pasture; and (3) for forests. In 1919, 36 per cent of the land in the Ozark Region was devoted to crops; 12 per cent to pastures and 52 per cent was in forest and cut-over land. The crops are grown both in the uplands and lowlands where the most favorable conditions of relief and soil are found. The pastures, in the main, occupy the rougher lands of the uplands, where the soil is thin and infertile and unsuited to crops. Altho there are some pastures in the lowlands, most of the land is in crops or forest. The whole region was originally forested and largely remains so to-day. The forests occupy the rough land of the uplands and the undrained sections of the lowlands. About 11 per cent of the forest and cut-over land is pastured.

## The Land in Crops

From the earliest settlement to the present time some phase of agriculture has been the dominant activity in the Ozark Region. The industry has developed along two distinct lines, general farm-

ing and fruit raising. The emphasis on these two phases has tended to shift from time to time.

The chief crops are corn, hay, wheat, and oats, in order of their importance. Among the orchard fruits, apples and peaches rank first. Small fruits, principally strawberries, raspberries and blackberries and vegetables offer some competition for the use of the land.

## Corn

As has been noted, corn is the dominant crop of the area, leading with 36 per cent of the acreage and 32 per cent of the value of all crops harvested in 1919. Corn has maintained the first place thruout a period of forty years (Fig. 2).

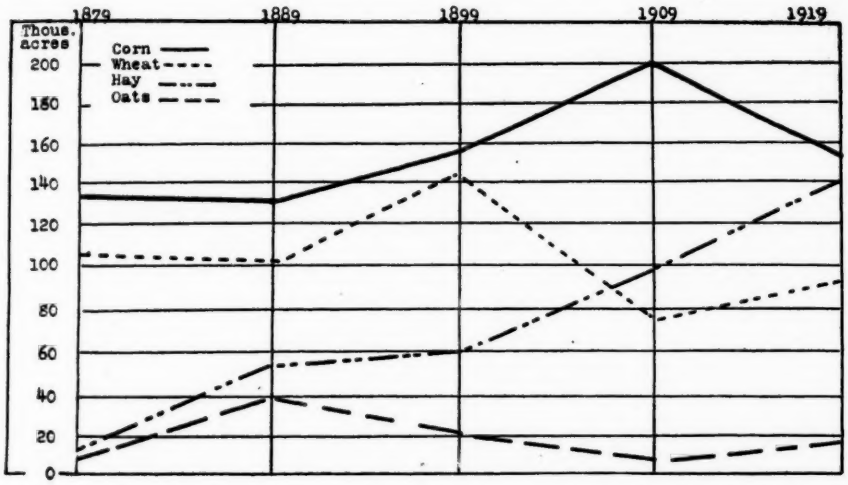


FIG. 2. Trend in the acreage of corn, wheat, hay, and oats in the Ozark Region of Illinois, 1879-1919

The crops raised in any region depend upon many factors, some of which are geographic and some economic. The Ozark Region lies on the southern margin of the corn and winter wheat belt, where the climate is favorable for the growth of corn. Corn thrives best where there are warm nights as well as warm days, but withal it requires plenty of moisture. These conditions prevail in the Ozarks. Corn prefers a fertile soil with a high humus content. Altho corn is grown on almost every farm, it is more important in those areas where there are extensive lowlands of fertile alluvium. The cultivation of corn does not require large pieces of machinery. The dissected character of much of the surface makes

the extensive use of machinery difficult and tends to discourage the production of small grains. A man with a one horse plow can put in a crop of corn in a small river or creek bottom and raise enough corn to supply the feed for his animals and some food for his family. Another factor, which is by no means insignificant, is the fact that corn is a traditional crop of the area. It has been raised since the earliest settlement and many farmers would not know how to change their farm practices. The increasing importance of cattle raising in some counties makes corn a valuable crop as a source of feed for the animals.

### Hay and Forage

Hay and forage constitute the second most important crop of the region, occupying 33 per cent of the acreage and contributing 21 per cent to the value of all crops harvested in 1919. Hay has shown a steady increase in the acreage in the forty year period (Fig. 2). A relatively heavy rainfall is favorable for a good grass growth, while a drier season for the curing of the hay is necessary. The average annual rainfall of the area is 45 inches. The maximum occurs in the early summer. The latter part of the summer, August and September, is likely to be drier.

### Wheat

Wheat ranks third among the crops raised in the region, occupying 22 per cent of the acreage and contributing 17 per cent to the value of all the crops harvested in 1919. During the forty year period some notable changes in the wheat acreage have occurred (Fig. 2). The trend between 1879 and 1899 was similar to that of corn. Between 1899 and 1909, however, the acreage dropped 83,496 acres. The increase in 1919 was slight and was probably the result of the high prices during the war time and has not continued.

Wheat is grown mostly in the southern tier of counties. Very little is grown in the hill lands at the present time for a number of reasons. (1) The soil is poor, due to excessive erosion and continuous cropping without fertilization. (2) It is difficult to use labor saving machinery in the more dissected portions. (3) In some sections the condition of the people does not permit the buying of expensive machinery necessary for the production of wheat; corn can be cultivated with less expensive equipment. The average

value of farm machinery in one county is only $175 per farm. (4) Wheat, as well as other grains, is unimportant because of the competition with the fruit in the hill lands. This is true in Union and Johnson Counties. (5) The rainfall of the region is 45 inches; this is probably too high for the production of the best quality of wheat. The highest yields per acre are obtained in regions where the rainfall is between 30 and 35 inches. (6) Another factor in influencing the acreage devoted to wheat is the problem of transportation. Railroad development has been retarded in the eastern ridge counties.

As has been noted the largest acreage is found in the southern tier of counties, where the surface is less rugged. Soil erosion has been less, competition with other products has not been severe, and transportation facilities are better. The skill of certain nationalities as a factor in influencing the acreage devoted to certain crops in a region should not be overlooked. While the number of foreign born or of foreign parentage is relatively small in the area, the German element is by far the most numerous. Out of 941 persons of foreign birth or parentage, 472 are German, which are found in four counties, namely, Alexander, Massac, Pulaski, and Union. These people are accustomed to raising wheat and the small grains rather than corn, which helps to explain the larger acreages in these counties.

### Oats

Of the four major crops, oats are the least important, occupying in 1919 about 4 per cent of the acreage and contributing 1.5 per cent of the value of all harvested crops. The counties which lead in the production of wheat also lead in the production of oats for some of the same reasons. Oats are not, however, a profitable crop in the region. The area lies between the spring oats region to the north and the winter oats region to the south; it is therefore a transition zone where it is too cold for winter oats and too warm for spring oats.

### Fruits and Vegetables

The Ozark Region is one of the commercial orchard centers of the state. There were 1,289,864 trees of bearing and non-bearing age in 1919. This is approximately 12 per cent in the state. About 81 per cent of the total number in the region is concentrated in the two counties, Johnson and Union.

Temperature seems to be the most important climatic factor in the location of the commercial orchards. It is especially significant in the period of bud development. In the spring a sudden freeze may result in serious loss. In order to lessen the danger from frosts the orchards are located on the crest of the ridge or on the northern slope. This position affords better air drainage and the position on the north slope tends to delay the early development of the buds. Plenty of sunshine for the development of a good color and a cool prolonged fall for ripening and harvesting are highly desirable climatic factors. These conditions are present in the Ozark Region. It has been noted that the two commercial centers are located in the hill-lands where the surface is dissected and where the soil is thin and infertile, poor in humus and leached of many valuable constituents.

Markets and marketing facilities are as important as the physical condition in the location of orchard and trucking centers. The Ozark Region is favorably located with regard to markets to the south as well as to the north. Cairo, and Paducah to the south, are consuming centers for these products; the mining cities and towns immediately north of the ridge and the larger cities more remote, notably Saint Louis, Springfield, and Chicago afford markets for large quantities of fruits and vegetables. Most of the products reach the markets by two north-south railway lines. Within a short radius trucks are used and with the further development of the surfaced roads this radius will be extended. Other sections of the area are as admirably located as far as physical conditions are concerned but the lack of transportation facilities has retarded the development. This is especially true of northern Pope and Hardin Counties.

The last factor but by no means the least, is the development of community skill and experience. Fruit raising has always been an important industry in the region; many of the early settlers planted trees which they brought with them from their old homes in the east. The industry has passed thru several stages in its history. The commercial orchards date back to about 1854, a date which marks the completion of the Illinois Central Railroad. From this time on until 1875 the industry grew very rapidly; it became sufficiently large to need a special fruit train. The commercial orchards suffered a decline soon after this date. Several factors operated in bringing about the change: (1) About this time sev-

eral seasons of heavy frosts occurred, which resulted in killing many of the peach trees. (2) The markets were not sufficiently developed and in years of heavy production were easily glutted. (3) There was a lack of scientific knowledge to combat the orchard pests which were becoming a serious menace. (4) The development of railways in the south and the use of refrigerator cars brought the Ozark Region into competition with the trucking centers of the south. As a result of these unfavorable physical and economic conditions, many farmers turned to raising small fruits and vegetables. Trucking was not new in the region but the decline of the orchards caused more attention to be paid to it.

Since 1900 there has been a revival in the orchard industry. The growth has been slow but promises to be permanent. The control and change of certain factors which operated in the decline are the factors which have influenced the revival, namely, the enlarged markets, as a result of city development and the increasing demand for fresh fruit and vegetables; the advance in scientific knowledge in (a) the control of fungus diseases, (b) proper cultivation, fertilization, and spraying of trees, and (c) the best time for picking the fruit; improved methods in grading, and packing fruit; and the development of better organization for marketing the fruit, which has tended to stabilize the industry.

Due to the relatively low latitudes vegetables are ready for markets from the Ozark Region about four weeks earlier than they are from the northern part of the state.

## The Land in Pasture

The amount of land in pasture in the Ozark Region is relatively small compared with that devoted to crops and forests. Approximately 12 per cent of the area was in pasture in 1919, exclusive of woodland pasture.

The chief factors which influence the use of the land for pasture seems to be the rugged character of the surface and the poor soil. Land which has been ruined for crops by erosion and centuries of leaching under heavy rains, have reverted to pasture, or are supporting second growth timber. A limiting factor in the amount of pasture is the large per cent of forests of the area. In the lowlands the forests are frequently under water for many months of the year and therefore unsuited to pasturage. The forests of the upland are either extensive tracts or small wood-lots on farms.

The larger forested tracts are not used to any extent for pastures and probably never will be for several reasons. The wooded areas are unfenced and the expense of fencing, required by law, is great. The forests are sufficiently dense to shade out most grasses, therefore limiting pasturage. The clearing of the land for pastures or crops tends to increase the erosion, thus ruining the land for any purpose. The farm wood-lot is used to supplement the improved pasture. This type usually occupies the steep slopes and ravines on the farms.

The carrying capacity of the pastures, varies with the topographic and other physical conditions. The following estimates have been obtained from the reports from farm advisors in the region. The upland permanent pastures require six to eight acres for an animal unit during a seven month season. The capacity of the rotation pastures is much higher, only one and one-half acres being required on an average to carry an animal unit for the season.

## THE LAND IN FOREST

The Illinois Ozark Region was originally forested and it has today the most continuous forested area in the state. About 52 per cent of the area was forest and cut-over land in 1919. The forests may be divided into two great types, the upland forest and the lowland forest. The upland forest occupies the most rugged and exposed slopes, while the lowland forest is found along the stream courses and in the undrained sections.

The story of the forests of the region is that of the entire United States, that is, one of depletion without thought of reforestation. While 52 per cent is still under forest cover, not all is virgin timber. The rapid depletion of the forests is the result of the early settlement of the area and the consequent clearing of the land for farms; the need for material for homes, fuel, fences; the need of material for boxes, hampers, and crates in the fruit industry; the demand for mine props in the mining regions to the north; and the demand for material for other industries in the region and elsewhere.

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# BRITISH HONDURAS

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Columbia University

British Honduras is a little British colony about the size of New Jersey, hidden back in the Gulf of Honduras, six hundred and sixty miles west of Jamaica. It is a narrow strip of land on the eastern side of the Yucatan Peninsula, for the most part a low-lying forest drenched by the trade winds bringing rain from the Caribbean Sea, except for a short dry season in February, March and April. In the interior, a diminutive mountain range, the Cockscomb Mountains, rises above the lowland forests.

The colony is sparsely settled, containing a scant 46,000, or about five persons per square mile. Tho it has a long and romantic history British Honduras is as little known to the outside world as it is scantily peopled. While early found and claimed by the Spaniards, it was long visited only by buccaneers and English freebooters from the West Indies. In 1638, a buccaneer named Willis with an English crew was driven off of the island of Tortuga by their fellow pirates and came to settle on the Hondurean coast, soon afterwards founding the town of Belize, where from time to time they were joined by other pirates. Soon many English planters and their slaves came from Jamaica and a lively trade in mahogany and logwood sprang up between Belize and Jamaica.

Many times the Spaniards tried to dislodge these English settlers but they never succeeded. In 1667, the Governor of Massa-

chusetts sent a British warship to aid them, so in 1670 Spain recognized the settlers' hold on Belize. Since then, officially or unofficially the little country has been British.

### GEOGRAPHIC REGIONS

Altho, in some respects, British Honduras is essentially similar thruout in its natural conditions, still, there may be recognized three well defined zones or geographic regions within the area: (1) The hot and humid coastal lowlands and off-shore cays, for the most part heavily forested—a region of European plantations and Carib fishing villages; (2) the upland forests—a region of woodcutting, forest hunting and native agriculture; and (3) the interior highlands—at present unused and even unvisited save by an occasional forest hunter or wandering band of Indians, but offering promises of mineral wealth, livestock rearing on the savannas and a possible healthful seat for future white settlement (Fig. 2).

### POPULATION AND GEOGRAPHIC ADJUSTMENTS

Of the 46,000 inhabitants of British Honduras, the majority are colored or mulatto, while over 20 per cent of the people are mestizo and many more are of aboriginal Indian stock. The white population includes Spaniards, descendants of Scotch and German traders, a few Americans and many people of doubtful mixed blood. The "native" population is ignorant, shiftless and much given to stealing, but the health and morals of the whites are fairly good. More than 11,000 of the total 46,000 people live in Belize, the capital, and probably two-thirds of the total population inhabit the coastal lowlands. The highlands are wholly unpeopled and great tracts of good land in the upland forests are unoccupied. A few towns such as Cayo, Guinea Grass and Orange Walk exist in the interior.

Land along the lower courses of the rivers was, at an early date, parcelled out in huge estates, each with several miles of water frontage. These estates are now held by the descendants of the old English buccaneers and of later Jamaican, Scotch and German settlers. These owners now employ many Indians, mulattos and mestizos from Belize to cut mahogany during the dry season. Likewise great numbers of these wood cutters during the wet season are employed in the backwoods, cutting logwood and hauling it to

the river banks where it is tied to lighter wood and floated down the streams at the end of the rains.

An interesting geographic adjustment in this area may be seen in the coastal settlements of the Caribs in the southern part of the colony. These Caribs are the descendants of a number of Caribs brought here from St. Vincent in the early 1700's. They are con-

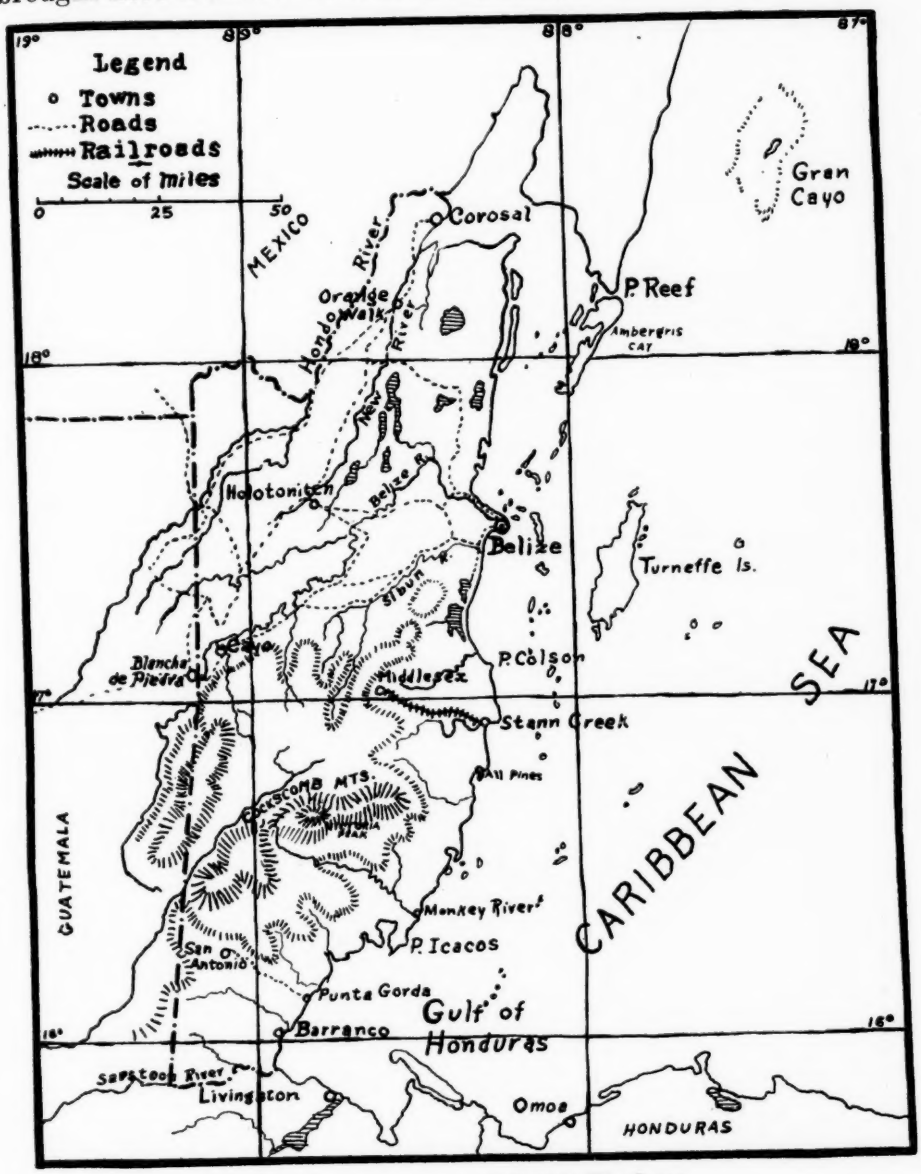


FIG. 1. Sketch map of British Honduras

siderably mixed in blood but they still have preserved from their ancestors a love for the sea, a skill in navigation and a distaste for farming. Hence they have clung to their coastal villages and most of them are engaged in fishing, and hunting turtles, tortoises, conches and sponges.

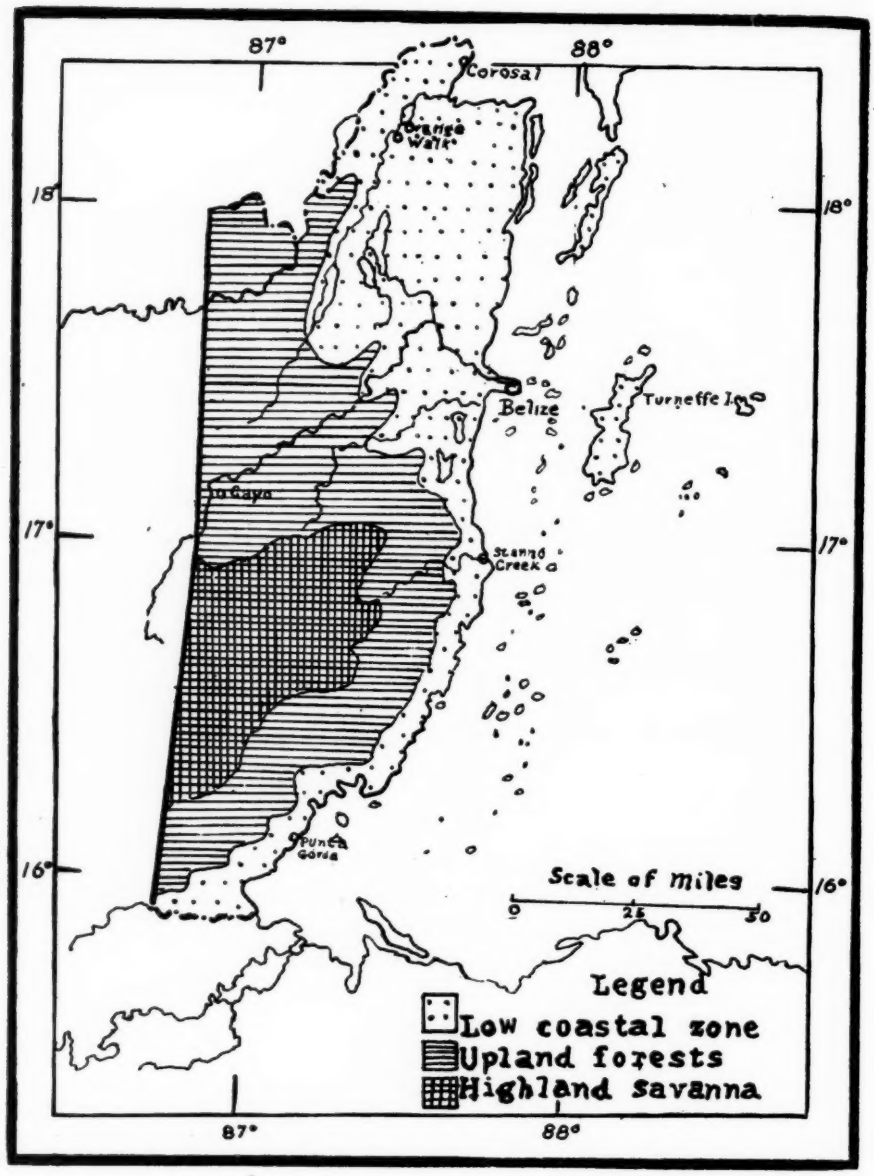


FIG. 2. Sketch map of British Honduras showing geographic regions

On the higher sandy ridges along the coast and on the off-shore cays there are many small cocoanut plantations, some owned by whites and some by "natives." Their combined export, however, has never exceeded nine million nuts in a single year.

In the northern river valleys, a few miles inland, the Moya Indians are engaged in subsistence farming. In addition, they cultivate by primitive methods an excellent type of tobacco on the fine, light soils along the river banks. Much of this tobacco is marketed in Belize.

A few miles back from the coast, on the better drained lands may be found two areas of banana production which maintain connection with the United Fruit Company. In the area back of Belize these plantations are owned by Englishmen and a few Americans and Spaniards who send their products out by the Belize River. Farther south, along North Stann Creek, a colony of German planters operate thriving plantations and send their bananas out to the coast by a system of three tramways and a short railway which runs from the coast to Middlesex, twenty-five miles inland.

Americans from the Gulf States have settled around Corosal in the north and near Punta Gordo in the south of the colony where they are raising sugar on large plantations, but the lower cost of production of Cuban sugar has ruined their business during the last few years.

In the northern uplands, Moya Indians are scattered about in their forest villages, while in the south a few Spanish-Indians and Mosquito Indians from Guatemala do a little real peasant farming. The methods of these "Milparos," however, are very poor, for the better, stronger laborers are engaged in woodcutting, leaving the worst physical specimens to do the farming. The staple food of these Indians is corn from which tortilla cakes are made, supplemented by beans or frijoles. A little rice, cassava and a few yams are grown for food, and small quantities of cotton and sisal are produced for their textiles.

From March to July of every year, scores of natives are idle in the larger towns. In July after being grub-staked by white merchants they go back into the forest to hunt and tap the sapodilla tree for chicle gum. In March, this gum is brought out to the coast to be exported to the United States.

### TRANSPORTATION

At present, the interior of the colony is almost entirely undeveloped, and seems likely to remain so indefinitely. The bulky agricultural products which might be raised here would require extensive transportation facilities, which do not exist in British Honduras. The Belize, Hondo, Sibun and Sittee Rivers are the main highways for the colony but their courses are so much broken by falls and rapids as to make them of small use for navigation save by dories and small motor boats. This prevents the bringing out of bulky commodities and renders freight rates on all goods very high. Several mediocre roads exist in the northern part of the colony, connecting Belize with the interior towns and the Guatemalan frontier, but the Belize River is the chief route inland and carries most of the traffic going to and from the interior.

The city of Belize is the natural commercial outlet for the inhabitants of the Sibun, Manatee and Belize valleys and hence most of the commercial activity of the colony centers here. Here is the financial market, the wireless station and the cable and steamship connections with the outside world. Belize, while all important in British Honduras, is only a small city, but were Guatemala to develop, Belize by reason of its position as the natural gateway to Guatemala, would become an important commercial city.

### ECONOMIC HANDICAPS

There are three great handicaps to economic development in British Honduras: (1) The poor location of the colony, (2) the shortage of labor, and (3) the lack of adequate internal transportation.

The colony lies at the head of the Gulf of Honduras, off the main lines of world trade, its coastline is bad for navigation and it is too far north to even benefit from the Panama Canal. The acute labor problem might be solved by importing Orientals, but in view of the already mixed character of the population, the addition of an Oriental element would appear unwise. At present, the streams are the chief carriers of trade, but what the colony needs is a system of good roads or light railways. This would mean agricultural development and would enable the colony to awake from the lethargy which now envelops it. This lack of internal transportation and economic development makes British Honduras but little frequented by ships from foreign countries. Three com-

panies maintain fortnightly service between Belize and New York, New Orleans and Mobile, carrying cargoes of tropical fruits and chicle to the United States, while tramp steamers from London occasionally call for cargoes of timber. Small coasting steamers frequently stop for cargoes of bulky commodities, most of which ultimately come to the United States.

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## OBTAINING GEOGRAPHICAL MATERIALS FOR SCHOOLS

MARY J. BOOTH
State Teachers College, Charleston, Ill.

Before deciding to make a collection of free or inexpensive supplementary material it would be wise to find out its probable value. Mr. Roland M. Harper wrote an article entitled A Neglected Source of Geographical Material in the *Journal of Geography* for June 1916, p. 392, in which he gives his estimate of its value in the following words: "As far as accuracy is concerned, the present standard for free geographical literature, with the possible exception of that issued by land companies, is higher than one might suppose without investigation. Many of the statements in these advertising pamphlets relate to facts which there would hardly be any motive for misrepresenting, or which can easily be verified in these days of rapid dissemination of knowledge. Even some supplements to school geographies, published during the present century, are more extravagant, and even inaccurate, in describing the advantages of their respective regions, and say less of the disadvantages, than some of the literature here discussed."

Collecting and Making Use of Local Geography Material by Ella Barlett Knight in the *Elementary School Journal* for February, 1920, p. 459, gives practical suggestions which have been used effectively in a school in Omaha. She says: "I doubt if any teacher realizes, until she has tried the resources of her own locality, how much valuable material she can obtain at home."

If you use the official school letterhead when writing for the different publications better results usually will be obtained, as it serves to identify you. Some commercial firms do not recognize a request for pamphlets unless a stamp is enclosed. Most firms are

glad to supply material free to teachers for use in their schools but object to furnishing a whole class of thirty or forty with the same pamphlets.

Many of the usable geographical pamphlets are not listed anywhere that I have been able to discover. The different geographical journals list few if any of these publications. The Booklist, published by the American Library Association in Chicago, has a useful list of pamphlets in some of the numbers. Occasionally mention is made of noteworthy pamphlets in the *Library Journal, Public Libraries,* and the *Wisconsin Library Bulletin.* The publications of the federal government are listed in the Monthly Catalogue of United States Public Documents and the state publications in the Monthly List of State Publications, both distributed by the Superintendent of Documents, Washington, D. C.

Read the advertisements of railroads, both foreign and domestic, steamship lines and manufacturing firms appearing in magazines and newspapers, which frequently offer to send free, or for postage, descriptive booklets. The firms which advertise most extensively usually have the best booklets. Just now there are advertisements for world cruises and travel in the south; in the spring and summer the north and west will be featured, while constantly appear advertisements of commercial and industrial products. Write chambers of commerce in large cities and towns. Many of their publications are well illustrated. At expositions and fairs sometimes you will chance on valuable publications that will be difficult to duplicate. Newspapers often publish geographical articles that are worth clipping and old numbers of magazines are a fruitful source both for pictures and articles. Advertising circulars of books, especially travel books, sometimes have usable pictures.

The school library is the place to keep the collection of pictures and pamphlets for geography classes. If there is no school library, it is possible the public library will be able to furnish you with suitable material. Teachers often prefer to collect their own material and are obliged to where there are no library facilities.

After obtaining a quantity of this material it is likely to prove almost useless unless cared for properly. Large waste envelopes, folders made of paper, or the regular vertical file folders manufactured by commercial firms, may be used to keep the material on

one subject together and these kept together in a box, drawer, or vertical file. At first one envelope may be large enough to keep all the material on one state, as, Illinois; later a separate envelope may be needed for Chicago. All the material on each of the different industries should be kept together, alphabetically arranged. If the collection is kept from year to year and additions made, the result will be both interesting and valuable. To keep the collection at its best pamphlets that are out of date or have proved valueless should be discarded from time to time.

Recent publications may be used on the geographical bulletin board. In addition to clippings from newspapers and notices of recent geographical articles in magazines the *Geographic News Bulletin,* published every week during the school year by the National Geographic Society, is well adapted for this use and later can be added to the regular collection.

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## ANNUAL MEETING OF THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

### WASHINGTON, D. C., 1924

The National Council held its annual meeting in the library of the National Geographic Society in Washington, December 29, 1924. All sessions were well attended and the papers presented showed careful preparation. The first session was devoted primarily to a discussion of geography as a social science in the junior high school, and secondarily to a type illustration of a detailed regional study. The inability of Dr. Rugg to attend and present his plan of a general social science course brought keen disappointment, and as a result the discussion was somewhat one-sided and curtailed.

The leading papers of the second session dealt with the objectives of geographic instruction; geographic principles in the study of cities; the organization of geographic material for teaching; and bases for judging textbooks in geography. The third session was held in connection with the annual banquet. Dr. Colby's paper brought out the need of giving training in *how to teach* to prospective college and university instructors, and emphasized the opportunity that some university has of establishing such a course of training.

The committee charged with preparing tentative standards of attainment for the first six grades made a preliminary report. The work of the committee is now well under way and the plans indicate that a highly suggestive final report will be the outcome. The committee appointed last year to draft a tentative score card for geography textbooks failed to make any kind of a report. It is hoped that this committee will really function during the coming year.

Dr. Atwood, chairman of the resolutions committee, presented the following which was adopted unanimously.

The National Council of Geography Teachers in session December 29, 1924, has enjoyed the gracious and generous hospitality of the National Geographic Society; and wishes at this time to express its appreciation of the entertainment it has received, and to take occasion as a body of teachers of geography to express its appreciation of the educational service which the National Geographic Society is rendering to geography in the publication of its magazine, its News Bulletin, and in the various research expeditions which the Society has conducted.

Respectfully submitted,
WALLACE W. ATWOOD, *Chairman*
A. E. PARKINS
N. A. BENGTSON

The following business was transacted at the annual meeting of the Board of Directors and Executive Committee.

1. Upon motion of the nominating committee the following officers were elected.

*President,* A. E. Parkins, George Peabody College for Teachers, Nashville, Tenn.

*Vice President,* Erna Grassmuck, State Department of Education, Harrisburg, Penn.

*Vice President,* Mabel Stark, Mills College, Oakland, Calif.

*Secretary,* George J. Miller, State Teachers College, Mankato, Minn.

*Treasurer,* Douglas C. Ridgley, Clark University, Worcester, Mass.

*Members of Executive Committee,* terms to expire December, 1927: H. H. Barrows, University of Chicago; R. H. Whitbeck, University of Wisconsin; W. R. McConnell, Miami University.

*Directors at Large:* Mendel E. Branom, Harris Teachers College, St. Louis, Mo.; Fred J. Breeze, State Normal School, Muncie, Ind.; Angela Broening, Supervisor of Geography in the Junior High School, Baltimore, Md.; C. E. Cooper, Ohio University, Athens, Ohio; Erna Grassmuck, State Department of Education, Harrisburg, Penn.; Myrta McClellan, University of California, Los Angeles; Elizabeth Martin, State Normal School, Cheney, Wash.; Ellen C. Semple, Louisville, Ky.; Mable Stark, Mills College, Oakland, Calif.

2. Dr. A. E. Parkins was instructed to continue the magazine service established in 1920.

3. Professor Ridgley was directed to continue the membership campaign.

4. All committees whose reports were not complete were directed to continue their studies and report at the next meeting.

GEORGE J. MILLER, *Secretary*

## GEOGRAPHY'S DISTINCTIVE CHARACTER

That geography has a distinctive educational contribution to make is a truism among geographers. However, such does not appear to be the case among many who "teach" geography or who write "about" it. Those who have many subjects to teach each day cannot become specialists in each and hence they must depend upon books as sources of information and of ideals. It is a misfortune that many authors have not grasped the essential quality of geography, and have included in their books a vast amount of wholly non-geographical material. It is possible, however, for the teacher to utilize a definite standard as a test to ascertain whether a given body of material should be included as geography. Such a tentative standard was established a few years ago by the Joint Commission on the Presentation of Social Studies in the Schools. As an aid to the busy teacher it seems worth while to reproduce the pertinent portion of that report. The distinctive character of geography is set forth as follows:

> As its distinctive contribution to the social studies, geography gives an understanding of earth conditions and natural resources as the material basis of social development by showing the relationships which exist between natural environment and the distribution, characteristics, and activities of man.
>
> This understanding of the relationships between man and his natural environment is acquired largely thru comparative studies of specific groups of people living in specific regions. Such studies show how variations in different peoples reflect the influences of their respective environments; in many cases they also lead to the discovery of geographic principles. A knowledge of these principles or generalizations, contributes, among other things, to an appreciation of the wisdom of utilizing earth resources efficiently, and in many cases points the way toward a more harmonious adjustment of man to his environment.
>
> The realization that differences in peoples result in part from differences in natural environment also helps to promote a sympathetic understanding of peoples in that it affords a key to the explanation of characteristics and attitudes likely otherwise to be misunderstood.
>
> The study of the peoples of varied regions in different parts of the world discloses, moreover, their interdependence and reveals the fact that the environment affecting each group of people has come, thru means of transportation and communication, to embrace practically the entire earth. The idea of earth unity derived from the realization of such interdependence is another contribution of geography to the social studies, and is essential to the understanding of world affairs.

Apply this standard as a "measuring stick" when you are tempted to teach as geography such subjects as the following: structure of textile fibres, construction of a gas engine or radio,

operations of cloth manufacture, construction and operation of textile (or other) machinery, breeds of livestock, diseases of plants and animals, cuts of beef, details of government organization, names of state officers, city police system, et cetera. These are only a few illustrations of the extraneous matter that consumes the geography hour and contributes to failure. People who would refuse to discuss such material in a history or arithmetic class do not hesitate to dump it into geography. The absurdity of this procedure does not appear to have dawned upon them. Under such conditions genuine geographic material, properly presented, cannot make the contribution that is exclusively its own. The time has arrived when teachers should rebel against having all sorts of things attached to geography and thus handicap their work and contribute to failure. Teachers and authors have no right to bolster up their material by calling it geography. This is to trespass upon geography's good name and to admit that the extraneous matter needs some prop to support it. *Geography! What crimes are committed in thy name!* G. J. M.

## NIAGARA, CANADA, UNITED STATES

Teachers of geography have many times wanted definite, authoritative information on Niagara Falls and its power resources. These falls present numerous problems wholly unlike any other water power, because of their international character. Their great importance makes it imperative that the present and coming generations should be familiar with the situation that exists. "Niagara Falls: Its Power Possibilities and Preservation" presents a thoro, unbiased, and scientific study of power development at these great falls. Thru the courtesy of the author, Dr. Samuel S. Wyer, and the Smithsonian Institution all members of the National Council, of record February 1, will receive a copy of this report. A sharp distinction between numerous current beliefs and the actual facts is drawn clearly. That future utilization of Niagara and waters of the Great Lakes, will lead to international friction seems certain. Considerable bitterness prevails even now on the Canadian side because many Canadians feel and believe that Great Britain has not looked after their interests as effectively as they themselves could on the matter of settling boundary disputes. A number of

current beliefs entertained by probably 99 per cent of the people are contrary to the facts that must ultimately be faced. Dr. Wyer summarizes these facts as follows:

1. The Canadians feel that the St. Lawrence should be regarded as "their river," however, as the boundary line now stands, the water power development, or a considerable portion, can be handled on the basis of international development only.

2. The Canadians feel that the Niagara River is "their river" and that the boundary line should fall along the eastern line and not through the middle of the stream.

3. The Canadians feel and believe that the treaty between the United States and Canada provides that there should be no diversion from the Great Lakes except for navigation. The facts of the case are that the treaty specifically exempts diversion for sanitation and navigation purposes.

4. The Canadians have always been taught that most of the water shed area of the Great Lakes was on the Canadian side. The facts of the case are that Canada has forty per cent and the United States sixty per cent of this area.

5. Under the present water diversion limits at Niagara Falls, Canada gets 36,000 cu. ft. and the United States 20,000 cu. ft. per second. The Canadians feel that since Ontario does not have any coal deposits, that in a matter of increased diversion for power purposes, they should receive preference in any ratio that should be made to apply to future diversion.

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## LONG OR SHORT?

A succession of incidents led to "making up" our January number exclusively of short articles and the February number exclusively of long ones. This presents an opportunity to seek from our readers an expression of opinion on a problem that always perplexes the Editors. Comment has been delayed so you would have time for an uninfluenced reaction. *Are long articles or are short ones most valuable to you?* Many authors—who are naturally greatly interested in their subject—have a propensity for writing extended discussions. They believe that the material can be made more useful if it is adequately presented. A few have the faculty of saying a great deal in few words and believe that the reader can supply what is omitted. What is your reaction? The Editors desire to make the *Journal* of the greatest possible value to schools and would like your candid opinion. This means *you!* Let us hear from hundreds of our readers. Please state your preference and your reasons on a postal card and mail to the Editor at once. While you are writing tell us whether you prefer subject-matter articles or articles describing successful methods of teaching.

## A CORRECTION

Mr. Howe asks that a correction be made in his article "In the Wake of the World Fliers," in the January number. The word "preceding" on page 36, line 26 should read "succeeding." Please make this correction in your copy.

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# GEOGRAPHY PUZZLE CONTEST

The puzzle presented on the front cover is a slightly modified form of one prepared by Miss Mary N. Penhallow of the Madison Ave. School, Atlantic City, New Jersey, for her fifth grade class. She has found the puzzle an interesting and effective method of teaching "fact" geography, and her students have worked out many for class use. *This one is presented here for you to solve.*

### WHO MAY COMPETE

The contest is open to students in any elementary school or high school.

### THE AWARD

The *Journal of Geography* will be sent for one year to each of the five schools sending in the best solutions. Accuracy and neatness will count in making the award. *You have five chances to win!* Do not delay but get your answer in early so there will be ample time for its consideration. The whole school may work as a unit in solving the puzzle. The names of the winning schools will be published in the *Journal* but no advance announcement will be made. All answers will be read and judged by Miss Cora P. Sletten.

### SPECIAL REQUIREMENTS

1. All answers must be in the Editor's office by April 20, 1925.
2. Give name of school and address to which the *Journal* should be sent, and name of teacher. If the solution was prepared by a particular grade give the grade as, fourth, seventh, ninth, etc.
3. Send all solutions to the following address in care of Miss Sletten.

THE JOURNAL OF GEOGRAPHY,
*State Teachers College,*
MANKATO, MINNESOTA.